b.) Remarks

Claims 1-21 are pending. New claim 21 has been added.

Claims 1 through 20 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. A number of bases were set out for this rejection. They are addressed below.

First, claims were rejected because they do not have any "means or structure limitations to conform the optical resonator."

Applicants respectfully disagree. Optical resonators are defined typically by two mirror structures that enable the establishment of the standing wave characteristic of resonance. Claim 1 requires "at least two mirror structures". Thus, the claim sets forth the mirrors that are required to define the resonator.

Second, the claims were rejected because they do not have any clear measurement unit to define the value 3.5.

The value V_r, however, is dimensionless. The choice to define this value was made by Applicant for the purpose of clarity. For example, the equation could be written with minor manipulation as follows:

$$\frac{3.5\lambda}{\pi w} > \bar{n}\sqrt{d_0/L_c}$$

New claim 21 illustrates this principle.

The Applicants thought that the equation would be most clear if it were as set forth in Claim 1, however. Applicants believe that the fact that the invention is defined in terms of a dimensionless quantity does not render the claim indefinite. A judgment was simply made that this was the clearest way of expressing the resonator characteristics.

Third, the claims were rejected because of a failure to provide a clear definition of V_r. Here again, Applicants respectfully disagree. The claims include the following equation:

$$V_r \equiv \frac{\pi w}{\lambda} \bar{n} \sqrt{d_0 / L_c} ,$$

which defines the quantity V_r in terms of the refractive index, wavelength, length of the optical cavity, and sag of the net mirror profile. Thus, this quality is defined. In fact, the claims contain the definition.

Fourth, the claims were rejected for not reciting "any means plus function" to clearly define the optical resonator profile." Again, Applicants respectfully disagree. Specifically, an optical cavity is defined as comprising at least two mirror structures that comply with the equation. Thus, the claimed "optical resonator" is defined.

No additional "means plus function" recitation should be required. Moreover, the fact that an equation is required to define the invention, it should not obviate the ability of the Applicants to protect it.

The claims were rejected because they were "directed into the subject matter of mathematical algorithms/equation. Again, Applicants respectfully disagree. The claim is directed to "an optical resonator". The invention is not directed to a mathematical algorithm, but instead, an optical resonator comprising at least two mirror structures.

Thus, for the foregoing reasons, Applicant believes that this indefiniteness rejection should be withdrawn.

Claims 1 through 20 were also rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,418,641 to Hendrow, *et al.*

Applicants believe that the present claims are not anticipated by this reference. Specifically, the Hendrow, *et al.* Patent, while being directed to an optical resonator, does not teach the construction of an optical resonator as described by the present claims.

Specifically, in each of the independent claims, the width of at least one of the mirror structures is specified in terms of the wavelength of operation and length of the

optical cavity, in the case of claim 1 and new claim 21, or the optical mode size, as required by claim 7, or 12.

In contradistinction, the Hendrow Patent does not provide any specifications concerning the diameter of the mirrors. In short, the patent does not appreciate that by controlling the size of the mirrors, the transverse modes can be controlled.

Instead, the Hendrow, *et al.* Patent takes a different approach to transverse mode control. Specifically, it focuses on controlling the radii of curvature of the mirrors.

Compared to the present invention, it is believed that the Hendrow solution is more difficult to implement since mirrors with very long radii of curvature must be fabricated, which is technically difficult.

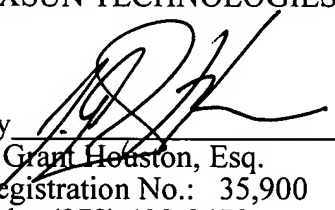
Basically, the present invention eliminations or minimizes the existence of higher order modes, while the Hendrow system accepts their presence but seeks to minimize their spectral impact on performance.

Thus, for the foregoing reasons, Applicants believe that the present claims are not anticipated by the applied reference.

Applicant believes that the present application is in condition for allowance. A Notice of Allowance is respectfully solicited. Should any questions arise, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

AXSUN TECHNOLOGIES, INC.



By_____
J. Grant Houston, Esq.
Registration No.: 35,900
Tel.: (978) 439-3479
Fax: (978) 262-0035

Billerica, Massachusetts 01821
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